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# Role of Higher Education Institutions in Shaping the Employability of Graduates: Evidence from Khyber Pakhtunkhwa, Pakistan

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## Abstract

*This research paper investigated how higher education inputs can influence the employability of recent graduates. The study collected primary data through a self-administered questionnaire, which was distributed to a random sample of 580 graduates from the Swat district in Khyber Pakhtunkhwa. The collected data was analyzed using several statistical methods. Descriptive analysis was conducted to summarize and present the characteristics of the sample and the variables of interest. T-test analysis was performed to examine differences between groups, such as graduates from old and new institutions or public and private institutions. OLS regression analysis was employed to investigate the relationship between employability and employability skills, controlling for various factors such as father's occupation and years of schooling. Additionally, a logistic regression analysis was done to look at how higher education and employability factors affect the chance of finding work. The analysis's findings showed that factors related to higher education, notably the institution's age, moderated the association among employment and professional development. Overall, the statistical analyses conducted in the study provided insights into the relationships and dynamics between employability, employability skills, and higher education inputs, contributing to a better understanding of the factors affecting graduate employability in the Swat district. Moreover, the results emphasized the significance of developing employability skills during the course of graduation in influencing graduates' employability. Consequently, the study recommends that younger institutions seek guidance from older ones to strategize and enhance the employability outcomes for their graduates, considering the importance of experience in this regard.*

*Keywords: Employability, Higher Education Institutes, District Swat*

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## INTRODUCTION

Employability refers to a person's capability to gain and maintain employment by possessing the necessary skills, knowledge, attributes, and attitudes sought by employers. It encompasses a broader perspective than simply being able to secure a job, as it also emphasizes the ability to adapt to changing work environments, pursue career advancement, employability opportunities, and remain employable throughout one's professional life. Employability involves a combination of technical or vocational skills specific to a particular occupation or industry, as well as transferable skills that can be applied across various job roles. These skills enable individuals to effectively perform their job duties, contribute to organizational success, and thrive in a competitive job market.

On the other hand, employability skills, also known as job or career skills, refer to a set of essential abilities and qualities that individuals possess or develop to enhance their prospects of finding employment, advancing in their careers, and adapting to the demands of the modern workplace. These skills are highly valued by employers and contribute to an individual's overall professional competence and success. These skills provide advantage to the individual who have these as compared to these who lack these skills and thus their demand is high in today's challenging job market. It is believed that individual who have these skills get job easily and matches their area of study and interest as compared to their other counterparts.

The issue of varying employability levels among graduates, the differences in job search outcomes, and the alignment of jobs with their areas of study and interest has sparked questions, like why do some graduates exhibit higher employability levels compared to others? Why do some graduates secure employment quickly while others experience prolonged job searches or remain unemployed? Furthermore, why do some individuals find jobs that align with their areas of study and interest, while others end up working in unrelated fields?

The current study intends to investigate the influence of graduate employability on skills and explores the possible moderating function of higher education institutions in forming the link between employability and skills in order to answer these issues. By investigating these factors, the study aims to shed light on the mechanisms that influence employability outcomes and understand how educational institutions can play a role in enhancing employability by fostering the development and utilization of relevant skills. Through this research, we hope to uncover insights that will contribute to a better understanding of the factors that contribute to employability disparities among graduates.

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Ultimately, the findings may inform policies and interventions aimed at improving graduate employability and facilitating better job-market transitions for individuals.

The employability of graduates is influenced by a multitude of factors, encompassing various domains such as personal characteristics, family background, social factors, and the educational institution they attend (Forrier & Sels, 2003). Within the realm of personal characteristics, certain traits play a significant role in determining employability. These traits include the ability to take risks, goal-oriented behavior, self-efficacy, and self-esteem (Hansemark, 2003). These personal characteristics serve as the underlying foundation that contributes to the disparities in employability levels among individuals. They provide insights into why individuals may respond differently to the same circumstances or situations (Llewellyn & Wilson, 2003). By examining these factors, we can gain a better understanding of the various elements that shape and influence the employability outcomes of graduates.

The employability outcome is the result of the interaction of different factors working together. The employability of an individual is an additive process which starts from the society where an individual live and passes through different educational and training institutions. All- these institutions add different things to the personality of individual which is then utilized by the individual to compete in the labor market and make his/her careen in an organization (Jones & Spicer, 2005). Similarly, among the family characteristics, the education level of the parents, their occupation, number of family members and ethnicity are some key predictors of the employability. While there are several educational factors that indicate the degree of employability of graduates, such as the kind of school (public or private), age of the institution (new or old institution), and field of study. These educational institution factors work as moderator in the relationship between employability and employability skills of graduates (Karamesini, 2008).

Recently the topic of employability has gained greater importance, especially when the access to higher education has widespread in the recent years (Bennett, 2019); (OECD., 2018). In addition to this, due to the globalization and rapid technological advancement the economic and social demands of the market is changed and now it demands more flexible worker. In the light of these structural changes in the market the Higher Education Institutions are compelled to rethink about the training and education they are providing to the masses, for the purpose to make it more suitable to the needs of the society and employers. ((Bennett, 2019); (Clarke, 2018; Donald *et al.*, 2018).

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The theoretical and empirical literature developed over the years support the view that employability is a construct that is formed by a complex set of interactive factors consisting of individual and social factors (Raffe, 2014) (Tomlinson, 2017). Keeping in mind such complexity of the employability construction different approaches of employability are presented, among which the dispositional based approach and competence-based approach are worth mentioning (Vanhercke *et al.*, 2014). The first approach of employability focused on the proactive attitude of graduates regarding career and work (Fugate & Kinicki, 2008). While the second approach focus on the perception of graduate's abilities, skills, and capacities of graduates as promoters of the employability prospects (Heijde & Van Der Heijden, 2006). Both these approaches focus on micro and subjective consideration which are based on the perspective that self-perception of an individual about their employability play a vital role in the determination of employability. In our study we will focus on the second approach and will try to find out that how the skills and abilities of graduates are linked with different institutions and how it can be improved.

The main objective of this research is to examine the correlation between graduates' employability and their employability skills, while also considering the potential influence of educational institution characteristics as moderators in this association. This work seems fruitful due to the reason that there is a greater graduate's unemployment in Pakistan and among the responsible factors, low employability skills of graduated and inapplicability of the acquired knowledge are worth mentioning. Both these factors are linked directly or indirectly with the performance of educational institutions particularly higher education institutions. Therefore, the need of the day is to update the existing system of higher education in order to include more practical aspects of the labor market in the curriculum for the purpose to produce the graduates who fulfill the requirements of the labor market and employers. This study will further update our understanding of how higher education institutions might act as moderators to improve graduates' employability.

## 1. LITERATURE REVIEW

Greater research has been done on the factors that affect graduates' skills and the moderating effect of HEIs in the link between skills and employability. The higher education system is made up of several interconnected components that combine to generate graduates that meet the demands of employers in the employment market. (Potgieter, 2012). A study conducted by (Finch *et al.*, 2013) concluded that there is a greater impact of the reputation of the institution on the thinking of the graduates, and thus during the selection of the institution they keep it in their minds. The study also

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concluded that the reputation of the institution has also a greater role in the interview and selection process for selecting the employees by the employers.

There is some indication that the institution's age and kind have a bigger influence on the graduates' employability outcomes. According to (Blasko *et al.*, 2002), graduates of older universities had a distinct advantage over those of younger schools, and these differences can be linked to the experience that older institution graduates gained over time. Similarly (Purcell & Hogarth, 1999) also concluded that during the selection process the employers prefer the graduates of the well reputed institutions which indicate that the employers are more satisfied with the graduates of the well reputed intuitions as compared to the new institution graduates. Employers are also of the view that the graduates of well-established institution perform better in the work environment. (Cranmer, 2006) in his study found that the well-established institution keeps the graduate's employability in the top while setting their mission statement. They focus on the employability of graduates because they know that valuable graduates are their product which has to be displayed in the word of work. The employability of the graduates is reflected in the work performance in the real work environment. According to (Fulgence, 2015) for keeping the employability as the top priority it is necessary that the institution must have greater funds and experience which they utilize for making their plan of action. Normally the younger institution doesn't have such funds and experience so the graduates produced by the older institutions are in greater advantage over the younger institutions.

The selection of the employers is also based on the experience of the employees with the graduates of a particular institution, if they have good past experience with the graduates of a particular institution, they recommend the graduates of that particular institution to others. On the other hand, if the employers are not satisfied with the old graduates of a particular institution, they try to avoid their current graduates also. For instance, research by (Singh & Singh, 2008) found that workers often favor graduates from public colleges over graduates from private institutions, and that these preferences are based on employees' prior interactions with graduates from both public and private institutions. similarly, a study conducted by (Devins & Hogarth, 2005) concluded in their study that a graduate who get job after a longer period of unemployment, usually leave the job early without any prior notice to their organization, and the reason behind is that, they are not prepared to work.

However, a similar study conducted by (Finch *et al.*, 2013) came to the conclusion that during the recruitment greater importance is usually given to the soft skills

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of the graduates while the reputation of the institution they attended is given very less importance. A study by (Shin & Zhou, 2003) also concluded that it is not the age and the ownership of the institution which are considered important, rather it is the specialty of the institution which matters. A part from all these things an institution has to provide something special to their graduates which the graduates of the other institutions are lacking. These specific skills are considered important and will matter in the process of recruitment. Finally, a study by (Branine, 2008) also found in his study that the age and ownership of the institution are considered less important in the selection process. According to this study, it is actually the acquired skills of the graduates at one side and the display of these skills on the other side which make impact in the recruitment process.

Higher education institutions are increasingly regarded as key agents in making students not only intellectually but also professionally. Recent studies emphasize the importance of integrating employability into the core mission of universities. According to Warman et al. (2024), employability is no longer just about job placement but involves the development of transferable skills such as communication, teamwork, and problem-solving. These "soft skills" are seen as critical by employers across sectors, yet remain inconsistently embedded within higher education curricula (Eimer & Bohndick 2023 and Alharahsheh & Pius, 2020).

A comprehensive review by Monteiro et al. (2025) highlights that graduate employability is shaped by a complex mix of institutional, individual, and contextual factors. While work-integrated learning (WIL) has proven effective in reducing the gap between academic learning and industry expectations, the implementation of WIL remains uneven across institutions and disciplines (Raihan & Azad, 2023). In particular, students in humanities and social sciences often receive less exposure to practical work experiences compared to those in technical fields.

Moreover, despite the adoption of several employability models, there is little consensus on which framework best serves diverse educational and labor market contexts. A 2023 review identified 21 distinct models of employability in higher education, underscoring the lack of standardization and the need for institutions to tailor their methods based on local needs and capacities (Mustajab & Irawan, 2023).

Additionally, while some HEIs have adopted embedded curriculum approaches, including English for Occupational Purposes (EOP), to support career readiness (Warman et al., 2024), many still focus narrowly on academic content, leaving graduates

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underprepared for rapidly changing job markets (Tushar & Sooraksa, 2023). The current surge in digital and remote work chances has also shifted the skillsets required for employability, raising new questions about how HEIs can remain approachable.

In nut shell, the existing research provides valuable insights into the relationship between higher education institutions (HEIs) and graduate employability while it presents inconclusive results. Some studies suggest that institutional factors (age, ownership, and reputation of HEIs) directly affect the development of employability skills and employment outcomes. While others claim that these factors have no significant effect on the relationship. Additionally, there is divergence regarding whether these educational inputs impact employed or unemployed graduates more significantly. Despite growing interest in employability, there remains a notable lack of empirical evidence from developing regions, such as Pakistan, where higher education systems operate under resource constraints, and employer expectations may differ considerably from global trends. Particularly, few studies have explored how institutional characteristics affect employability outcomes in rural or less-developed areas, such as Swat district. This study addresses this gap by empirically examining how various higher education inputs shape graduate employability in a localized, under-researched context, contributing to a more nuanced understanding of institutional influence in developing economies.

## 2. RESEARCH METHOD

The research conducted in this study involved gathering primary data collected through questioners. The focus of the study was on graduates from the swat districts who completed their studies between 2017 and 2022. according to the federal bureau of statistics report (PBS, 2017), the annual graduation rate in the swat district averages at 24,490 graduates emerged within the specified time period, constituting the target population of interest. The sample size necessary for the study was determined using Yamane's formula, represented by equation (1)

$$n = \frac{N}{1+N\,(e^2)} \qquad (1)$$

To collect data, an online questionnaire was designed and shared among a randomly selected group of graduates representing various regions in the swat districts. A total of 585 individuals submitted the questionnaires, providing complete responses due to the mandatory nature of the questions. The rationale behind focusing on graduates from 2017 onwards was the assumption that they would likely be employed or engaged in further

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studies (Kong, 2011). As a results, only three graduates who completed their studies before 2017 were exclude from the dataset. Additionally, two graduates above the age of 34 were exclude to minimize potential biases introduce by their prior occupational experience. These adjustments resulted in a final dataset consisting of 580 graduates, of whom 249 (43%) were employed and 331 (57%) were unemployed.

### 3.1 VARIABLE DEFINITIONS AND MEASURES:

As we don't have existing scales to directly measure our variables (dependent and independent), so we have created our own constructs based on what is known in the literature. These constructs are appropriate for our study because our main variables are qualitative. According to (Spector, 1994), self-made constructs are better suited for measuring these types of variables accurately.

#### 3.1.1 Employability of Graduates:

To evaluate the characteristics related to employability, by following (Juhdi *et al.*, 2010). a Likert scale was created with response options ranging from 1 (strongly disagree) to 5 (strongly agree). This scale was used to assess both internal and external employability. The items pertaining to these characteristics were combined, and the total employability variable was calculated by averaging the scores across all the scale items. To validate the scale and ensure its reliability, a reliability analysis was conducted using Cronbach's alpha coefficient. Cronbach's alpha value of 0.97 surpasses the recommended threshold established by (Cronbach & Thorndike, 1971). This high coefficient indicates a strong internal consistency among the items and suggests that the scale is reliable.

#### 3.1.2 Employability skills;

To measure the employability skills of graduates, we used five distinct components: personal traits, processing skills, core skills, initiative ability, and attitude. To assess these components, we utilized a set of different items, following the approach employed by (Potgieter, 2012). Each item was designed to capture a specific aspect of the corresponding employability- skill component. To rate their level of agreement or disagreement with each item, the respondents were provided with a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). By using this scale, we aimed to capture the extent to which graduates perceived themselves as possessing the specific employability skill described by each item. The calculated Cronbach's alpha coefficient for the employability skill items was found to be 0.98. This value significantly exceeds the desired level of 0.70, indicating a high level of internal consistency and reliability among the items used.

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### 3.1.3 Higher Education Institution`s Variables

In the survey, participants were asked to provide information such as the name of the institute where they completed their qualification. This data was collected to assess variables including institutional ownership, age, and field of study. To determine the founding year and public or private status of the respective institutions, we cross-referenced the information obtained from the participants with the official websites of the particular institutions, as well as the records from the Higher Education Commission (HEC) Islamabad and the Higher Education Department of Khyber Pakhtunkhwa (HED KP). Colleges and universities founded before the year 2000 are regarded as older educational institutions, whilst colleges and universities founded after the year 2000 are regarded as new institutions. In order to meet the growing demand for higher education, notably in the province of Khyber Pakhtunkhwa, the years after 2000 saw the formation of several new institutions as well as the conversion of other campuses into universities. A dummy variable is also used to take institutional type into consideration; it has a value of "0" for private institutions and a value of "1" for public institutions.

### 3.2 Data and Construct Validity

The study relied predominantly on self-reported measures, raising concerns about the accuracy and validity of the estimates. To address this issue, several measures were implemented to ensure data and estimate validity. Principal component analysis, recommended by (Podsakoff *et al.*, 2003), was employed to assess the presence of common method bias in the constructs. This analysis involved retaining all components with Eigen values greater than one for both the dependent and independent variables. Regarding the employability variable, two components with Eigen values of 0.03 and 0.05 were excluded from the analysis, while the remaining components demonstrated statistical significance and were retained for further analysis.

### 3.3 Education production function

In our study, we will utilize the Contemporaneous Educational Production Model, which was proposed by (Houtenville & Conway, 2008). This model builds upon existing research in the field of educational production function and examines the factors that influence the employability of graduates. It recognizes that employability development is a complex process influenced by various current and past educational factors, as well as

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individual characteristics. Thus, we aim to provide a comprehensive understanding of the dynamics involved in the development of employability.

$$E_i = F(ES_i, SES_i, \ldots\ldots (1)$$

Where $E_i$ represent the employability of an individual, $ES_i$ represents the employability skills of an individual "i," and SES represents the Socio-Economic Status of graduate "i." In equation form by following (Ding & Lehrer, 2007) we can also write the above equation as:

$$E_i = \beta_0 + \beta_1 TS_i + \beta_2 FO_i + \beta_3 FS_i + \varepsilon_i \ldots\ldots (2)$$

where (βs) represent the parameters to be estimated for the constant, total employability skills (TS), father's occupation (FO), and father's years of schooling (FS) the element TS stands for the graduate`s overall employable skills, FO for the father's profession, FS for the number of years he spent in school, and $\varepsilon_i$ stands for the error term.

Similar procedure can also be applied to estimate the individual components of total employability skills, resulting in separate equations for each component.

$$E_i = \beta_0 + \gamma_1 CO_i + \gamma_2 PQ + \gamma_2 PS_i + \gamma_2 AT_i + \gamma_2 IE_i + \beta_2 FO_i + \beta_3 FS_i + \varepsilon_i \ldots\ldots (3)$$

The equation can be further enhanced by including the additional variables: CO (core skills), PQ (personal qualities), PS (process skills), IE (initiative and enterprise), and AT (attitude of younger graduates). Moreover, recognizing the significant influence of Higher Education Institution's (HEI's) inputs on graduate employability, these variables can also be incorporated into the model:

$$E_i = \alpha_0 + \alpha_1 TS_i + \alpha_2 FO_i + \alpha_3 FS_i + \alpha_4 OW_i + \alpha_5 AG_i + \varepsilon_i \ldots\ldots (4)$$

Taking into account the moderating effects of ownership (OW) and age (AG) of the institution, the equation can be expanded to include interaction terms for these variables. Thus, the revised equation is as follows:

$$E_i = \alpha_0 + \alpha_1 TS_i + \alpha_2 FO_i + \alpha_3 FS_i + \alpha_4 OW_i + \alpha_5 AG_i + \alpha_6 OW_i * TS_i + \alpha_7 AG_i * TE_i + \varepsilon_i \quad (7)$$

In Equation (7), we present the model that depicts the association between the overall employability skills of graduates and their employability, taking into account the moderating effects of institutional ownership and age.

## 3. RESULTS AND DISCUSSIONS

### 4.1 Descriptive Results

The descriptive findings show that 72 percent of participants, attended public institutions, which include public colleges and universities. In contrast, 28% of the respondents received their degrees from private institutions, which include private

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colleges and universities. These results show that students prefer to attend public universities over private ones for their higher education. Furthermore, according to the survey results, 49 percent of the graduates finished their education in schools that had only recently been founded, that is, after the year 2000. The remaining 51% of participants received their diplomas from institutions that were founded before 2000. Additionally, 10% of participants earned a Master of Science (MS) degree, while 1% of the claimants obtained a Doctorate in Philosophy (Ph.D.) degree within the stipulated timeframe.

**Table-1: RESPONDEN`S CHARACTERISTICS (N 580)**

| Variable | Intensity | Percentage (%) |
|---|---|---|
| Institution`s Type | Public sector | 72 |
| | Private sector | 28 |
| Institution` age | New Institutions | 49 |
| | Old Institutions | 51 |
| Status of Employment | Employed Graduates | 43 |
| | Unemployed Graduates | 57 |
| Profession of Father | Civic employee | 40 |
| | Private servant | 30 |
| | Businessman | 30 |
| Qualification of Father | Uneducated Parents | 04 |
| | Prime Education | 08 |
| | Matriculate | 14 |
| | Undergrad degree | 09 |
| | MS/MA or more Education | 17 |

*Source: Author`s own calculations*

Similarly of the parents who are working, 40% are engaged in the public sector, 30% are independent contractors, and the other 30% are in the private sector. This distribution demonstrates the parents' varied professional backgrounds and how they affected the graduates' job choices. The survey results also include information on the parents' level of education. It demonstrates that 4% of the parents lack a high school diploma, 8% have finished elementary school, 14% have reached the matriculation level, and 9% have bachelor's degrees. Additionally, 17 percent of the graduates had parents who hold advanced degrees or other credentials, suggesting that this fraction has a greater level of educational achievement. These variations in parental characteristics provide valuable insights into the study respondents and their potential impact on the employability of graduates. The educational and occupational backgrounds of parents can shape the

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opportunities and resources available to graduates, which in turn may influence their employability outcomes.

In Table 2, the study variables are presented with their corresponding mean values, standard deviations, and correlations. Notably, the variable "TI" (Type of institution) has a mean value of 0.71, indicating a greater preference for public higher education institutions among the participants. This finding is consistent with the research conducted by (Shah *et al.*, 2013), which emphasizes the inclination of individuals towards public institutions for higher education. The survey data collected for this study also supports this trend, as it reveals that out of all the students, whose number is 100, 28 are enrolled in private higher education institutions, while 72 are in public institutions. This demonstrates a significant enrollment disparity between public and private institutions in the study sample.

The father's years of education have a mean value of 10.20, indicating an average of 10 years of schooling completed by the parents. The range for the years of schooling variable is 0 to 16, where "0" represents illiteracy and "16" corresponds to a Bachelor's (Honors) or Master's degree. For father's occupation the mean value of 0.69 suggests a higher proportion of employed graduates having fathers employed in the public sector. Regarding the correlation among the independent variables. (Tabachnick *et al.*, 2007) advises that in order to keep coefficients in the model, they should be 0.7 or less. All of the independent coefficients in the current investigation fall below this cutoff, which supports their inclusion in the model. The Variance Inflation Factor (VIF) is calculated to evaluate multicollinearity. For all independent variables, a VIF value under 10 is advised, according to (Hair *et al.*, 1998), in order to reduce multicollinearity. The problem of VIF values for the variables required to be resolved in order to move further with the existing model. All variables were standardized to fix this. According to the computed VIF values, which vary from 1.02 to 8.63, the model may still be estimated using the currently available variables.

### 4.2 T-Test Analysis

The purpose of the T-test study was to look for any discrepancies depending on variables including the institution's age, its ownership, and the gender of its graduates. Prior to doing regression analysis, this approach allowed for a preliminary investigation of

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probable variances in employability. First, the results show that graduates from established colleges have much greater employability and overall employability abilities than graduates from newly founded schools. This is consistent with (Agasisti, 2011) study, which emphasizes the benefit of older institutions have from their expertise and superior financing accessibility.

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**Table-2: MEAN, STANDARD DEVIATIONS AND CORRELATIONSN= 580**

| | Mean | S D | E | TS | TI | AI | FO | FS | Interaction1 | Interaction 2 | VIF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dependent variable | | | | | | | | | | | |
| E | 3.38 | 0.91 | 1.00 | | | | | | | | |
| Independent variables | | | | | | | | | | | |
| Total Skills | 17.5 | 4.5 | 0.58*** | | | | | | | | 7.35 |
| | | | 0.00 | 1.00 | | | | | | | |
| Institution`s Type | 0.7 | 0.4 | 0.028** | -0.06 | | | | | | | 7.03 |
| | | | 0.04 | 0.12 | 1.00 | | | | | | |
| Institution`s age | 0.4 | 0.5 | 0.118** | -0.05 | 0.13** | | | | | | 6.77 |
| | | | 0.00 | 0.15 | 0.00 | 1.00 | | | | | |
| Father Occupation | 0.6 | 0.4 | 0.02 | 0.01 | 0.05 | -0.01 | 1.00 | | | | 1.05 |
| | | | 0.493 | 0.66 | 0.18 | 0.69 | | | | | |
| Father Schooling | 10.2 | 5.8 | 0.10*** | 0.07** | 0.08** | 0.04 | 0.09** | 1.00 | | | 1.03 |
| | | | 0.00 | 0.06 | 0.04 | 0.23 | 0.02 | | | | |
| Interaction terms | | | | | | | | | | | |
| Interaction 1 | 12.4 | 8.8 | 0.27*** | 0.34*** | 0.88*** | 0.31*** | 0.092** | 0.06 | 1.00 | | 8.22 |
| | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.031 | 0.14 | | | |
| Interaction 2 | 8.4 | 9.2 | 0.26** | 0.21** | 0.10*** | 0.93 *** | -0.03 | 0.01 | 0.18*** | 1.00 | 8.63 |
| | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.46 | 0.77 | 0.00 | | |

Where ***P < 0.01, **P < 0.05, *P < 0.1

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In the second part of the table, the t-test results compare employability and employability skills between male and female graduates. The results indicate that female graduates have an advantage in both employability and employability skills, with a significant difference observed in employability skills but an insignificant difference in employability. This finding aligns with the research conducted by (Blasko *et al.*, 2002), which also suggests that female graduates tend to exhibit higher competence compared to their male counterparts. These differences can be attributed to the greater amount of time and commitment that female graduates often dedicate to their studies. The additional effort and dedication put forth by female graduates contribute to their enhanced competence levels.

**Table-3: T-TEST RESULTS**

| **Variable** | **A: Age of the Institution** | | |
|---|---|---|---|
| | Old | New | Difference |
| Graduate`s Total Employability | 3.84<br>18.03 | 3.10<br>17.38 | 0.74**<br>1.03** |
| | B: Sex of the Graduate | | |
| Variable Name | Male | Female | Difference |
| Graduate`s Total Employability | 3.36<br>17.43 | 3.46<br>18.01 | -0.10<br>-0.57* |
| | C: Ownership of the Institution | | |
| Variable Name | Public | Private | Difference |
| Graduate`s Total Employability | 3.40<br>17.38 | 3.34<br>18.03 | 0.05<br>-0.64* |

*Source: s own calculations of author*

When the t-test analysis findings from Tables 1 and 2 are combined, it is clear that graduates from more established universities have an edge over those from more recent institutions in terms of both, overall employability skills and specific employability skills. Findings highlight the positive impact of the institution's age on the development and acquisition of employability skills by graduates. The results regarding public and private institution graduates yield mixed findings. Public institution graduates exhibit a higher mean employability compared to private institution graduates, while private institution graduates demonstrate higher mean scores in employability skills.

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### 4.3 OLS Results

In the OLS (Ordinary Least Squares) analysis, three models were employed: Model 1, Model 2, and Model 3. Each of these models consisted of subgroups A, B, and C, representing the employed, unemployed, and total groups of graduates, respectively. Model 1 aimed to examine the correlations between graduates' employability and the control variables, namely father's occupation and father's years of education. Model 2 includes parameters for the nature and age of institutions' interactions to examine their effect. Lastly, Model 3 explores the relationship between employability and individual components of employability skills, incorporating interaction terms, higher education input variables, socio-demographic variables, and control variables.

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**Table-4:OLS RESULTS FOR MODERATING IMPACT OF HEI`S IN THE DETERMINATION OF GRADUATE`S EMPLOYABILITY**

| | Graduate`s Employability | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Model No:1 | | | Model No :2 | | | Model No:3 | | |
| | 1a | 1b | 1c | 2a | 2b | 2c | 3a | 3b | 3c |
| Cons | 1.53 | 1.13 | 1.23 | 1.08 | 1.03 | 1.04 | 1.18 | 1.01 | 1.04 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Total Employability | 0.09 | 0.12 | 0.52 | 0.10 | 0.12 | 0.53 | __ | __ | __ |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | | | |
| Father Occupation | 0.05 | 0.003 | 0.02 | 0.05 | 0.04 | 0.01 | 0.01 | 0.04 | -0.02 |
| | (0.56) I.S | (0.37)I.S | (0.74) I.S | (0.58) I.S | (0.62) I.S | (0.08) I.S | (0.08) I.S | (0.65) I.S | (0.76) I.S |
| Father Schooling | 0.01 | 0.011 | 0.01 | 0.01 | 0.01 | 0.11 | 0.01 | 0.01 | 0.016 |
| | (0.04) | (0.15)I.S | (0.03) | (0.06) | (0.17) IS | (0.01) | (0.06) | (0.00) | (0.00) |
| Institution`s Type | __ | __ | __ | 0.17 | 0.03 | 0.08 | 0.14 | 0.01 | 0.06 |
| | | | | (0.07) | (0.76) I.S | (0.22) I.S | (0.00) | (0.01) I.S | (0.24) I.S |
| Institution`s Age | __ | __ | __ | 0.36 | 0.22 | 0.27 | 0.35 | 0.18 | 0.27 |
| | | | | (0.00) | (0.01) | (0.00) | (0.00) | (0.04) | (0.00) |
| Interaction -I | __ | __ | __ | 0.05 | 0.12 | 0.05 | 0.06 | 0.12 | 0.05 |
| | | | | (0.03) | (0.01) | (0.01) | (0.03) | (0.00) | (0.04) |
| Interaction-II | __ | __ | __ | 0.04 | 0.04 | 0.02 | 0.05 | 0.03 | 0.03 |
| | | | | (0.03) | (0.15) I.S | (0.04) | (0.01) | (0.03) | (0.04) |
| Core Skills | __ | __ | __ | __ | __ | __ | 0.38 | 0.41 | 0.40 |
| | | | | | | | (0.00) | (0.00) | (0.00) |
| Personal Qualities | __ | __ | __ | __ | __ | __ | -0.01 | 0.11 | 0.07 |
| | | | | | | | (0.98) I.S | (0.03) | (0.03) |
| Process Skills | __ | __ | __ | __ | __ | __ | 0.06 | 0.02 | 0.02 |
| | | | | | | | (0.26) | (0.59) I.S | (0.57) I.S |
| Initiative & Enterprise | __ | __ | __ | __ | __ | __ | 0.02 | 0.06 | 0.05 |
| | | | | | | | (0.76) I.S | (0.25) I.S | (0.25) I.S |
| Attitude & Work | __ | __ | __ | __ | __ | __ | 0.15 | 0.01 | 0.05 |
| | | | | | | | (0.03) | (0.98) I.S | (0.25) I.S |
| N | 246 | 246 | 246 | 334 | 334 | 334 | 580 | 580 | 580 |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| R-Square | 0.23 | 0.38 | 0.34 | 0.30 | 0.40 | 0.37 | 0.32 | 0.41 | 0.36 |

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### 4.3.1 Employability and Skills Relationship

The results presented in Table 4 indicate a statistically significant relationship between total employability skills and the employability of graduates in all three models. However, the significance of other variables varies across the models. All three models find the father's work to be unimportant, however Models 1a and 1c, but not Model 1b, find the father's years of schooling to be relevant. The kind of institution is one of the input variables for the higher education institution, although it is not important in Models 2b or 2c. This shows that, in some circumstances, the type of institution has a considerable influence on employability.

On the other hand, the institution's age is important. across all three models, suggesting that more established institutions are more employable than newer ones. This recurrent relevance of the institution's age raises the possibility that it is very important in determining graduates' employability. Within Model 3, the regression analysis explores the correlation between employability and a range of variables. These variables encompass higher education input factors, socio-demographic variables, interaction terms, as well as individual components of employability skills, including personal qualities, core skills, process skills, initiative & enterprise, and attitude & work ethics. The results of the regression analysis affirm the statistically significant distinctions identified in the t-test analysis, indicating that graduates from public and older institutions exhibit higher employability levels compared to graduates from other educational institutions.

### 6.3.3.2 Moderating role of HEI's inputs

Across all three models, the interaction term involving the overall employability skills and institution type demonstrates statistical significance. This discovery provides evidence in favor of the notion that the type of educational institution plays a moderating role in the relationship between skills and employability. Similarly, the interaction term between the individual's age and overall employability abilities is shown to be significant in models 2a and 2c but not in model 2b. This provides more evidence for the institution's age playing a moderating effect in the link between graduates who are employed and the whole group of graduates' employability and employability abilities.

In model 3, the interaction terms were investigated in conjunction with the various employability skill subsets and sociodemographic factors, such as the education and employment status of the father. The findings show that the kind of institution and

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employability skills have a substantial impact on employability for graduates who are jobless (Model 3b), employed (Model 3a), and a combined group of graduates (Model 3a).

Furthermore, in alignment with our hypotheses, which propose that higher education institution inputs, particularly the type and age of the institution, exert a moderating influence on the association between employability and employability skills, the interaction term involving employability skills and the age of the institution demonstrates statistical significance across all three models. This further supports the idea that the age of the institution plays a significant role in shaping the relationship between employability and employability skills.

### 4.4 Logistic Regression Analysis

#### 4.4.1 Logit Model Results

Findings of the logistic regression analysis indicate a significant association between years of schooling and the employability of graduates across all groups and models. Notably, effects of father's years of education were deemed insignificant in model 1 and model 2 for unemployed graduates, but it attained significance in model 3. To delve deeper into the data and capture subtle variations, (Pohlman & Leitner, 2003) suggest that the ordered logit model provides a more comprehensive understanding. Furthermore, the type of institution exhibited significance across all three models and groups, which contrasts with the OLS analysis where it was only significant for employed graduates. Moreover, both interaction terms were found statistically significant based on the logit model results.

#### 4.4.2 Order Logit Model Results

Based on the findings of the ordered logit model, as presented in Table 5, the age of the institution significantly influences the employability of both unemployed graduates and the overall group of graduates. However, the impact of the institution's age on the employability of employed graduates is determined to be statistically insignificant. Contrarily, the logit models imply that the institution's age has a less substantial impact on employed graduates than on jobless graduates and the combined groups. These findings may be contrasted with the findings of the OLS analysis, which showed a substantial relationship between the age of the institution and graduates' employability across all three groups and all three models.

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Furthermore, it was observed that the interaction demonstrated statistical significance in both the logit and ordered logit models. However, it is important to note that the results obtained from the ordered logit model exhibited a stronger level of significance compared to those obtained from the logit model. Additionally, core skills were found to have a substantial impact on determining graduates' employability.

## 4.5 Discussion

The primary objective of this study is to conduct a contemporary investigation into the correlation between graduates' employability and their abilities. The initial phase of the study concentrates on exploring the connection between employability and skills, taking into account the moderating role of Higher Education Institution's inputs in the process.

### *6.3.5.1 Role of Higher Education Institutions inputs as moderator*

The primary objective of this study is twofold: firstly, to investigate the relationship between employability skills and the employability of graduates; and secondly to assess the moderating effect of Higher Education Institution`s Inputs in the process. By analyzing the influence higher education inputs, the study aims to gain insights into how these factors can impact the relationship between employability skills and graduates' employability. These elements are crucial in determining how employability is growing (Rynes *et al.*, 1997). Previous research offers valuable insights into the potential moderating influence of higher education inputs, including the institution's type and age, on graduates' employability. These findings further reinforce the concept that higher education institutions not only impart academic knowledge through diverse courses but also foster a supportive environment that enhances students' employability, rendering them valuable employees. The quality of education and the institutional environment are influenced by the resources available and the experience accumulated by the institution over time. Consequently, it is expected that more experienced institutions would have better teaching quality and resources compared to newly established institutions.

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**Table-5: LOGIT RESULTS FOR MODERATING IMPACT OF HEI``S**

| Indep: Variables | Dependent variable: Graduate`s Employability as Satisfactory and Unsatisfactory | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Model No: 1** | | | **Model No: 2** | | | **Model No: 3** | | |
| | **1a** | **1b** | **1c** | **2a** | **2b** | **2c** | **3a** | **3b** | **3c** |
| Total Employability | 0.03*** | 0.01*** | 0.02*** | 0.01** | 0.02*** | 0.02*** | ___ | ___ | ___ |
| Father Occupation | 0.05 | 0.03 | 0.03 | 0.01 | 0.04 | 0.03 | 0.01 | 0.04 | 0.03 |
| Father Schooling | 0.05** | 0.01*** | 0.01*** | 0.04** | 0.09*** | 0.09*** | 0.05** | 0.01*** | 0.09*** |
| Institution`s Type | ___ | ___ | ___ | 0.16** | 0.26** | 0.01* | 0.16** | 0.14** | 0.05** |
| Institution`s Age | ___ | ___ | ___ | 0.11** | 0.19 | 0.04 | 0.12** | 0.14 | 0.03 |
| Interaction -I | ___ | ___ | ___ | 0.01** | 0.06** | 0.04** | 0.01* | 0.02* | 0.06** |
| Interaction-II | ___ | ___ | ___ | 0.012** | 0.06** | 0.02* | 0.01** | 0.03* | 0.03** |
| Core Skills | ___ | ___ | ___ | ___ | ___ | ___ | 0.09* | 0.04** | 0.05** |
| Personal Qualities | ___ | ___ | ___ | ___ | ___ | ___ | 0.08 | 0.02 | 0.02** |
| Process Skills | ___ | ___ | ___ | ___ | ___ | ___ | 0.01 | 0.04 | 0.01 |
| Initiative & Enterprise | ___ | ___ | ___ | ___ | ___ | ___ | 0.01 | 0.05 | 0.02* |
| Attitude & Work | ___ | ___ | ___ | ___ | ___ | ___ | 0.01 | 0.02 | 0.01 |
| N | 246 | 334 | 580 | 246 | 334 | 580 | 246 | 334 | 580 |
| Chi square Stat | 68.48 | 53.29 | 118.73 | 73.69 | 76.26 | 134.27 | 78.44 | 76.51 | 133.21 |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| P-Value | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

***Source: Author`s own calculations.***

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**Table-6: ORDERED LOGIT RESULTS TO MODEL THE IMPACT OF HEIS INPUTS ON GRADUATES' EMPLOYABILITY**

| Indep: | Dependent variable: Employability AS Poor, Satisfactory, very good and Excellent | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Model No : 1** | | | **Model No: 2** | | | **Model No: 3** | | |
| | **1a** | **1b** | **1c** | **2a** | **2b** | **2c** | **3a** | **3b** | **3c** |
| Total Employability | 0.02*** | 0.03*** | 0.02*** | 0.03*** | 0.02*** | 0.02*** | ___ | ___ | ___ |
| Father Occupation | 0.01 | 0.01 | 0.01 | 0.03 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 |
| Father Schooling | 0.02** | 0.02** | 0.02*** | 0.02** | 0.02** | 0.03** | 0.02* | 0.03** | 0.03** |
| Institution`s Type | ___ | ___ | ___ | 0.47* | 0.19** | 0.04** | 0.33* | 0.20*** | 0.085* |
| Institution`s Age | ___ | ___ | ___ | 0.15 | 0.22* | 0.14* | 0-01 | 0.20* | 0.14* |
| Interaction -I | ___ | ___ | ___ | 0.01** | 0.01*** | 0.01** | 0.01** | 0.02*** | 0.08** |
| Interaction-II | ___ | ___ | ___ | 0.04** | 0.080** | 0.03** | 0.05* | 0.07** | 0.03** |
| Core Skills | ___ | ___ | ___ | ___ | ___ | ___ | 0.09*** | 0.09*** | 0.09*** |
| Personal Qualities | ___ | ___ | ___ | ___ | ___ | ___ | 0.02 | 0.01 | 0.01 |
| Process Skills | ___ | ___ | ___ | ___ | ___ | ___ | 0.02 | 0.02 | 0.03 |
| Initiative & Enterprise | ___ | ___ | ___ | ___ | ___ | ___ | 0.01 | 0.03 | 0.01 |
| Attitude & Work | ___ | ___ | ___ | ___ | ___ | ___ | 0.05 | 0.03 | 0.02 |
| N | 246 | 334 | 580 | 246 | 334 | 580 | 246 | 334 | 580 |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chi square Stat | 49.0 | 136.0 | 1530.1 | 78.4 | 150.0 | 152.1 | 86.5 | 158.7 | 159.2 |
| P-Value | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

***Source: Author`s own calculations.***

The results of the analysis strongly corroborate our hypothesis, indicating that well-established institutions outperform recently established ones in cultivating highly skilled graduates. This assertion is substantiated by t-test analysis, OLS regressions, and logistic regression findings, all of which validate the influential role of an institution's age in determining this correlation. Moreover, the outcomes present significant evidence supporting the influence of institution type on the connection between employability and employability skills. These results remain consistent across all three models investigated in this study, as verified by both OLS and logistic regression analyses.

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